

ABSTRACT OF THE DISCLOSURE

An electronics assembly for integration with a tire structure or in another environment includes a condition-responsive device, an RF source, an antenna, and at least one controllable switching element. The condition-responsive device may comprise at least one acoustic wave resonator that is configured for
5 monitoring such parameters as pressure and temperature within a tire or associated wheel assembly environment. The frequency and bandwidth of the RF source is preferably inclusive of the respective resonant frequency bands for each acoustic wave resonator. An antenna may also be connected to the condition-responsive device for facilitating the transmission of electric signals
10 generated therein. In some embodiments, a switching element is coupled between the condition-responsive device and the RF source. Selective control of such switching element results in the modulation of data on the RF carrier, causing the condition-responsive device to transmit both sensed condition information as well as some other predefined digital data signal. Another
15 controllable switching element may be provided in parallel with the condition-responsive device to selectively cloak the device for predetermined amounts of time, thus offering an anti-collision solution for multiple transmitting condition-responsive devices. The switching elements and corresponding control elements may respectively correspond to such devices as a field-effect transistor with a
20 programmable microcontroller input or as an RFID transponder.